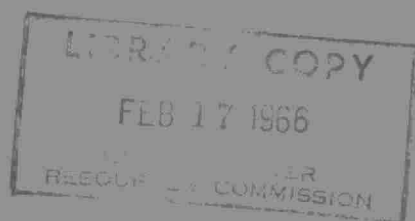




THE
ONTARIO WATER RESOURCES
COMMISSION
WATER POLLUTION SURVEY
of the
VILLAGE OF ~~TOTTENHAM~~
COUNTY OF SIMCOE

1965



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REPORT ON

WATER POLLUTION SURVEY

VILLAGE OF TOTTENHAM

COUNTY OF SIMCOE

THE DIVISION OF SANITARY ENGINEERING

ONTARIO WATER RESOURCES COMMISSION

NOVEMBER 1965.

INTRODUCTION

The purpose of this survey was to assess the conditions in the vicinity of the Village of Tottenham with reference to the quality of the watercourse associated with the municipality.

Tottenham, a village with a 1964 assessed population of 780 is located approximately 45 miles north-west of Toronto in the southerly portion of the County of Simcoe.

Water quality investigations of this type are performed routinely and upon request, and are primarily designed to locate and record any existing sources of pollution. Recommendations are made with respect to pollution abatement and prevention.

When water and sewage treatment works appear desirable or expansions to present facilities are necessary, the Ontario Water Resources Commission (OWRC) has a programme to aid in the construction and financing of these works. The Commission also sponsors courses for plant operators, to assist them in the operation and maintenance of sewage and water works.

SUMMARY AND RECOMMENDATION

Summary

This water pollution survey revealed that the only significant source of pollution in Tottenham was the municipal water pollution control plant.

Recommendation

It is recommended that sewage treatment facilities capable of providing secondary treatment should be installed at the earliest possible date.

WATER SUPPLY

Water for the municipal system, which is operated by the Tottenham Public Utilities Commission, is supplied from two wells. No treatment of the well water is provided.

The bacteriological quality of the water has been generally satisfactory, and the present supply was reported to be adequate.

Chemical analyses have indicated iron concentrations of greater than 0.3 ppm. Water for domestic use is recommended to contain less than 0.3 ppm of iron, in order to avoid problems with staining and sediment formation which higher levels of iron tend to cause.

DRAINAGE

Drainage for the westerly half of the village is towards a local mill-pond and watercourse. The latter is known as Beeton Creek and is tributary to the Nottawasaga River.

The area east of the main street drains into open fields.

REFUSE DISPOSAL

Garbage and refuse collected in the village is disposed of by incineration and periodic burial at a disposal area near the west end of Mill Street. The site is bounded on the west by Beeton Creek. A 125 foot setback exists between the material dumped and the edge of the creek.

Surface runoff from the area immediately north of the refuse disposal site drains under the roadway into an oxbow in the creek. No seepage from the site itself was reaching the creek. If the site is extended northward, it is possible that pollution would occur in the future.

Garbage is burned weekly and compacted and covered with earth, in the spring and fall.

SEWER SYSTEM

The municipality is served with a system of sanitary sewers and a limited area of the village possesses storm sewers. The latter drain either towards the pond and watercourse or into open fields as previously mentioned.

SEWAGE TREATMENT FACILITIES

For reference, brief details of the plant are presented on the following page.

<u>Date Collected</u>	<u>Description</u>	<u>5-Day BOD (ppm)</u>	<u>Susp. Solids (ppm)</u>
<u>1965 Cont'd.</u>			
May 12	Raw Sewage	152	186
	Septic Tank Effluent	-	-
	Filter Bed Effluent	88	52
June 14	Raw Sewage	100	134
	Septic Tank Effluent	74	33
	Filter Bed Effluent	-	-

The above results with the exception of those collected on May 12 are based on "grab" samples submitted by the operator. The samples dated May 12 were taken by personnel of the Division of Sanitary Engineering of the OWRC.

The BOD and suspended solids content of the final effluent are considerably higher than the Commission's objective concentration limits of not greater than 15 ppm.

SURFACE-WATER QUALITY

Table No. 1 presents results of the samples collected in connection with the survey and from the local watercourse. Figure No. 1 shows approximate location of sampling points.

CONCLUSIONS

It may be concluded from this survey and from previous inspections that the sewage treatment facilities serving Tottenham are inadequate for present day requirements.

The samples taken from the stream receiving the septic tank effluent revealed bacteriological pollution in excess of the

Commission's objective as indicated in the attached Table No. 1.

It was noted on May 12 and 18, 1965, that the filter beds were malfunctioning. It was reported on April 7, 1965, that two of the beds had been reconstructed and it was planned to reconstruct the two remaining beds.

The sewage treatment facilities serving the village are not capable of producing a consistently good effluent for twelve months of the year. The construction of additional sand filters would only improve the effluent quality during the warmer seasons. The addition of a biological process to effect secondary treatment is indicated as a prerequisite to a satisfactory final effluent.

All of which is respectfully submitted,

District Engineer


C.E. McIntyre, P.Eng.,

Approved by

J.R. Barr, Director.

Prepared by: D.J. Currie,
Engineer's Assistant.

/elb

EXPLANATION AND SIGNIFICANCE OF LABORATORY ANALYSES

(A) Bacteriological Examination

Bacteriological examinations were performed on samples from the watercourse. The Membrane Filter technique was used to obtain a direct enumeration of coliform organisms. These organisms are normal inhabitants of the intestines of man and other warm blooded animals. They are always present in sewage and are generally minimal in other pollutants. The results of the examinations are reported as M.F. Coliform count per 100 ml.

The Commission's objective for surface waters in Ontario is a coliform count of not greater than 2,400 organisms per 100 ml.

(B) Chemical Analysis

The chemical analysis performed on stream and out-fall samples included determinations for biochemical oxygen demand, suspended solids and in some instances turbidity.

(1) Biochemical Oxygen Demand (BOD)

Biochemical oxygen demand is reported in ppm and is an indication of the amount of oxygen required for stabilization of decomposable organic matter present in sewage, polluted waters or industrial wastes. The completion of the test requires five days, under the controlled incubation temperature of 20°C.

The Commission's water quality objectives are (1) for stream water -- a 5-Day BOD of not greater than 4 ppm.

(2) for storm sewer, sewage treatment plant and industrial waste discharges -- a 5-Day BOD of not greater than 15 ppm.

(2) Solids

The laboratory does tests to determine the total and suspended solids in a sample. The value for dissolved solids is determined by taking the mathematical difference between the total and suspended solids.

The concentration of suspended solids expressed in parts per million (ppm) is generally the most significant of the solids analyses in regard to stream water and outfall discharge qualities.

The OWRC's objective for discharge is a suspended solids concentration of not greater than 15 ppm.

(3) Turbidity

Turbidity is caused by the presence of suspended matter such as clay, silt, finely divided organic matter, plankton and other microscopic organisms in water or outfall discharges. It is an expression of the optical property of a sample and the results are reported in "Silica Units".

All analyses except
pH reported in ppm
unless otherwise
indicated.

Table No. 1-1

OUTFALL TABULATION AND ANALYTICAL RESULTS

Sampling Point No.	Description	Date Examined or Sampled	5-Day BOD	S O L I D S			Turb- idity	M.F. Coliform Count per 100 ml
				Total	Susp.	Diss.		
NT 66.5	Beeton Cr. @ road allowance between Conc. 4 and 5.	July 12/61	2.3	208	-	-	3.0	8,400
		Oct. 16/62	3.9	308	-	-	12.0	
		May 22/63	4.3	326	-	-	23.0	
		May 18/65	2.3	272	3	269		
NT 66.8	Beeton Cr. 1/4 mile downstream from water pollution control plant.	Aug. 6/64	4.5	240	4	236	*	
		Sept. 14/64	2.2	264	9	255	*	
		Oct. 14/64	2.6	290	17	273	*	
		Jan. 12/65	2.1	290	19	271	*	
		Feb. 23/65	2.0	276	34	242	*	
		Apr. 5/65	18.0	298	27	271	*	
		May 18/65	1.2	260	15	245	*	
NT 67.08	Beeton Cr. 100 ft. downstream from water pollution control plant.	May 18/65	10.0	348	30	318		130,000,000

* Taken By Plant Operator.

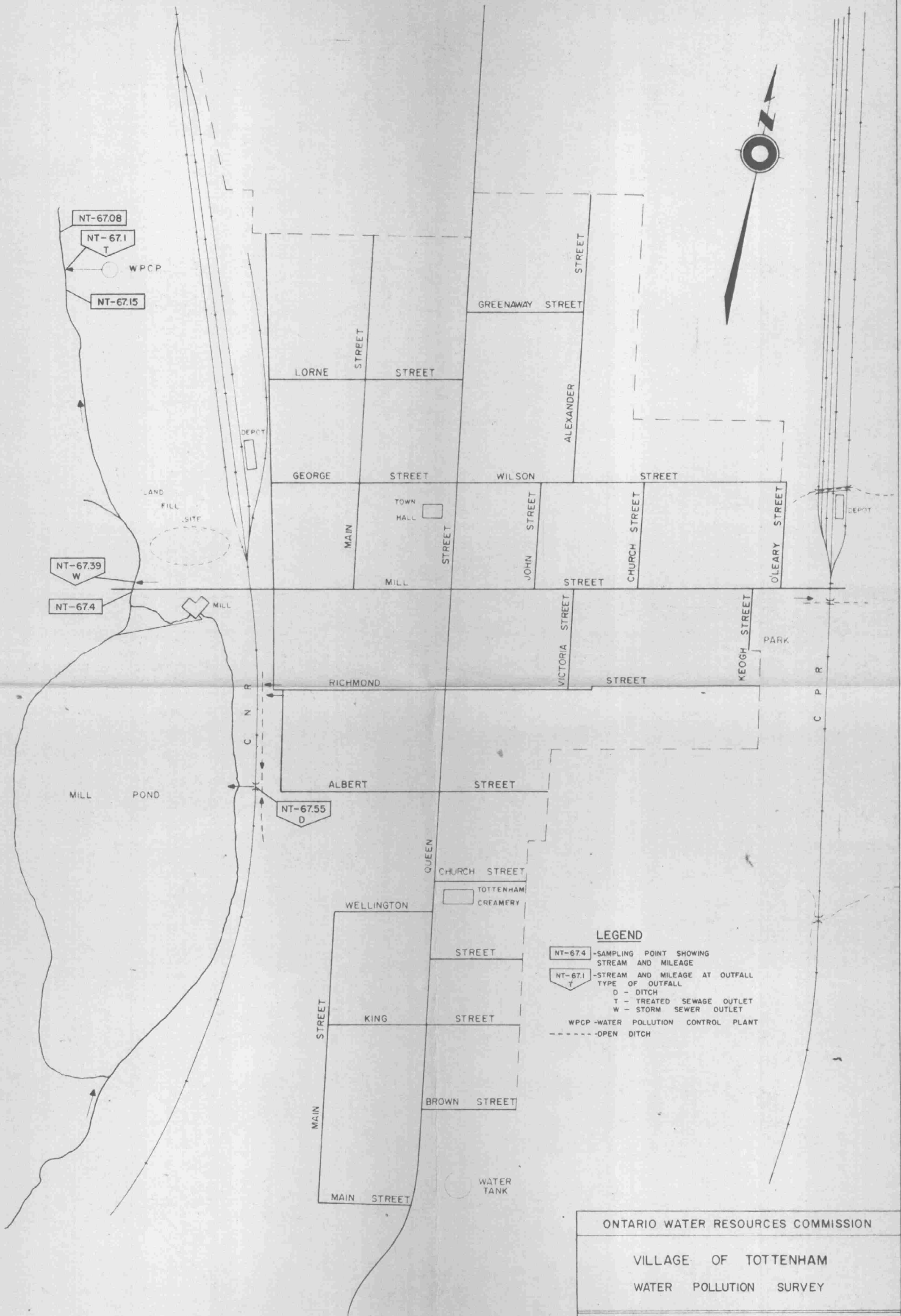
Table No. 1-2 (Continued)

<u>Sampling Point No.</u>	<u>Description</u>	<u>Date Examined or Sampled</u>	<u>5-Day BOD</u>	<u>S O L I D S</u>			<u>Turb- idity</u>	<u>M.F. Coliform Count per 100 ml</u>
				<u>Total</u>	<u>Susp.</u>	<u>Diss.</u>		
NT 67.1 T	Tottenham water pollution control plant sewer outfall.	Aug. 6/64	5.6	578	28	550	*	90,000,000
		Oct. 14/64	41.0	582	26	556	*	
		Feb. 23/65	165.0	612	63	549	*	
		Apr. 5/65	39.0	422	33	399	*	
		May 12/65	88.0	640	52	588		
		May 10/65	15.0	514	10	504	*	
		May 18/65	230.0	774	168	606		
NT 67.15	Upstream from water pollution control plant.	Aug. 6/64	3.0	248	56	192	*	40
		Oct. 14/64	2.2	280	12	268	*	
		Jan. 12/65	1.7	278	16	262	*	
		Feb. 23/65	2.1	250	23	227	*	
		Apr. 15/65	1.4	292	14	278	*	
		May 18/65	1.9	286	7	279		
NT 67.39	13" ø storm sewer outlet - Mill St.	May 18/65	0.4	370	4	366		40
NT 67.4	Beeton Cr. @ road allowance between Conc. 3 and 4 at West side of Mill St. - Tottenham Dam.	May 18/65	2.1	278	14	264		68

* Taken by Plant Operator.

Table No. 1-3 (Continued)

Sampling Point No.	Description	Date Examined or Sampled	5-Day BOD	S O L I D S			Turb- idity	M.F. Coliform Count per 100 ml
			Total	Susp.	Diss.			
NT 67.55	Drainage ditch outlet West of Albert St.	May 18/65.	NOT SAMPLED - OUTLET PARTLY SUBMERGED					
NT 68.2	Beeton Cr. @ Third Line.	May 18/65.	1.1	304	5	299		78



LEGEND

- NT-67.4 - SAMPLING POINT SHOWING STREAM AND MILEAGE
- NT-67.1 - STREAM AND MILEAGE AT OUTFALL TYPE OF OUTFALL
- D - DITCH
- T - TREATED SEWAGE OUTLET
- W - STORM SEWER OUTLET
- WPCP - WATER POLLUTION CONTROL PLANT
- OPEN DITCH

ONTARIO WATER RESOURCES COMMISSION

VILLAGE OF TOTTENHAM
WATER POLLUTION SURVEY

SCALE: 1" = 300'

DRAWN BY: W.R.E.

DATE: JULY 1965

CHECKED BY: D.C.

DRAWING NO: 65-85

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